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Andrew J. Ritz

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WOLF GREENFIELD (Microsoft Corporation)
C/O WOLF, GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER

LEE, CHUN KUAN

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ANDREW J. RITZ and ELLSWORTH D. WALKER

Appeal 2009-008043
Application 10/777,368¹
Technology Center 2100

Before JEAN R. HOMERE, JOHN A. JEFFERY, and JAMES R. HUGHES,
Administrative Patent Judges.

HOMERE, *Administrative Patent Judge.*

DECISION ON APPEAL

¹ Application filed on February 12, 2004. The real party in interest is Microsoft Corp. (Br. 2.)

I. STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) (2002) from the Examiner's final rejection of claims 1 through 5, 7 through 17, and 19 through 22. (Br. 2.) Claims 6 and 18 have been cancelled. (*Id.*) We have jurisdiction under 35 U.S.C. § 6(b) (2008).

We affirm.

Appellants' Invention

Appellant invented a computer readable medium for monitoring memory corruption in a system that employs direct memory access (hereinafter "DMA"). (Spec. 1, ll. 5-7.)

Illustrative Claim

Independent claim 1 further illustrates the invention as follows:

1. A direct memory access memory corruption detection system embodied on a computer readable medium comprising the following computer executable components:
 - an access data store that stores access information associated with memory, the access data store comprising an access table, the access table comprising a source identifier field, a memory address field and an access attribute field, the access attribute field distinguishes between read, read and write, write, and no access to indicate read, read and write, write, or no access for a combination of source associated with the access attribute and memory address range associated with the access attribute identified in the source identifier field and memory address field; and,
 - a memory controller that employs the access information to determine whether a requested direct memory access is permitted and rejects the requested direct memory access if it is not permitted and allows the requested direct memory access if it is permitted.

Prior Art Relied Upon

The Examiner relies on the following prior art as evidence of unpatentability:

Safranek	US 2004/0193755 A1	Sep. 30, 2004 (filed Mar. 31, 2003)
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Kondratiev	US 6,922,740 B2	Jul. 26, 2005 (filed May 21, 2003)
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Rejection on Appeal

The Examiner rejects claims 1 through 5, 7 through 17, and 19 through 22 under 35 U.S.C. 103(a) as being unpatentable over the combination of Safranek and Kondratiev.

Appellants' Contentions

Appellants contend that Kondratiev's disclosure of an access control list (hereinafter "ACL") only indicates memory ranges a device is allowed to access, but does not teach or fairly suggest a memory range that the device is not allowed to access. (Br. 6-7.) Appellants also argue that Kondratiev's access control list fails to teach or fairly suggest an access attribute field that provides both allowed and disallowed access information within a single field, as recited in independent claim 1. (*Id.* at 7.)

Examiner's Findings and Conclusions

The Examiner finds that Safranek's disclosure of a table that indicates memory access that is not allowed, in conjunction with Kondratiev's disclosure of a table that indicates the source, memory, and access type allowed, teaches or fairly suggests a table that indicates the source, memory, and access type that is both allowed and not allowed. (Ans. 17-18.) The Examiner also finds that Appellants' argument pertaining to a "single access

attribute field” is not commensurate in scope with the claim language. (*Id.* at 18-19.) Upon reviewing Appellants’ original disclosure, the Examiner finds that information associated with the claimed “access attribute field” is located within a single column. (*Id.* at 19.) Therefore, the Examiner finds that an ordinarily skilled artisan would have appreciated combining Kondratiev’s read and write access ranges into a single column on the ACL. (*Id.*)

II. ISSUE

Have Appellants shown that the Examiner erred in concluding that the combination of Safranek and Kondratiev renders independent claim 1 unpatentable? In particular, the issue turns on whether the proffered combination teaches or fairly suggests “the access table comprising a source identifier field, a memory address field and an access attribute field, the access attribute field distinguishes between read, read and write, write, and no access to indicate read, read and write, write, or no access for a combination of source associated with the access attribute and memory address range associated with the access attribute identified in the source identifier field and memory address field,” as recited in independent claim 1.

III. FINDINGS OF FACT

The following Findings of Fact (hereinafter “FF”) are shown by a preponderance of the evidence.

Safranek

FF 1. Safranek’s figure 1 depicts an operating system that utilizes a no direct memory access (hereinafter “NoDMA”) table (103) to restrict

access to memory segments containing sensitive data. (1: ¶ [0011].) In particular, Safranek discloses restricting access to memory segments containing sensitive data by flagging entries in the NoDMA table (103) corresponding to such segments and allowing only authorized programs to access the protected segments of memory (101). (*Id.*)

Kondratiev

FF 2. Kondratiev's figure 1 depicts DMA access verification logic (200) that determines memory access rights of a device making a DMA access request. (Col. 4, ll. 41-44.) In particular, Kondratiev discloses performing access verification by utilizing the device identification (hereinafter "ID") associated with a device to access an ACL data structure in order to determine the DMA access rights assigned to the device. (*Id.* at ll. 44-48.)

FF 3. Kondratiev's figure 2 depicts that "[the] ACL (200) contains a device ID, a read access memory range, a write access memory range, and an operational indication of whether DMA granted rights are limited to a duration of time." (*Id.* at ll. 59-63.)

IV. ANALYSIS

Claim 1

Independent claim 1 recites, in relevant part:

the access table comprising a source identifier field, a memory address field and an access attribute field, the access attribute field distinguishes between read, read and write, write, and no access to indicate read, read and write, write, or no access for a combination of source associated with the access attribute and memory address range associated with the access attribute

identified in the source identifier field and memory address field.

As detailed in the Findings of Fact section above, Safranek discloses restricting access to memory segments containing sensitive information by allowing only authorized programs to access flagged entries in a NoDMA table corresponding to such segments. (FF 1.) We find that Safranek's disclosure teaches an access information table that indicates whether programs are authorized to access memory segments containing sensitive information.

Further, Kondratiev discloses determining the memory access rights assigned to a device by utilizing the device ID associated with the device to access an ACL. (FF 2.) Kondratiev discloses that the ACL contains a device ID, a read memory range, a write memory range, and whether the DMA granted rights are limited to a duration time. (FF 3.) We find that Kondratiev's disclosure teaches an access information table that includes a device ID field, a read access memory range field, and a write access memory range field. Moreover, by indicating both the read and write access memory ranges that a device is authorized to access, we find that an ordinarily skilled artisan would have understood that Kondratiev's read and write access memory range fields also indicate the read and write access memory ranges a device is not authorized to access.

In summary, we find that an ordinarily skilled artisan would have readily appreciated incorporating Kondratiev's device ID field, read access memory range field, and write access memory range field into Safranek's access information table. Additionally, utilizing the background knowledge and common sense possessed by an ordinarily skilled artisan, we find that it

would have been obvious to rearrange and store the access information in the fields of Safranek's access information table. *See KSR Int'l v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). In this case, we find an ordinarily skilled artisan would have appreciated that the access information contained within both Kondratiev's read and write access memory range fields is capable of being rearranged and stored into a first and second field, such that the first field indicates an authorized memory range, and the second field indicates an access type or attribute (i.e., read access, write access, read and write access, or no access). Thus, we find that the proffered combination teaches or fairly suggests the disputed limitation. It follows that Appellants have not shown that the Examiner erred in concluding that the combination of Safranek and Kondratiev renders independent claim 1 unpatentable.

Claims 14, 17, 21, and 22

Appellants offer the same arguments set forth in response to the obviousness rejection of independent claim 1 to rebut the obviousness rejections of independent claims 14, 17, 21, and 22. (Br. 8-15.) We have already addressed these arguments in our discussion of independent claim 1, and we found them unpersuasive. Consequently, Appellants have not shown that the Examiner erred in concluding that the combination of Safranek and Kondratiev renders independent claims 14, 17, 21, and 22 unpatentable.

Claims 2 through 5, 7 through 13, 15, 16, 19, and 20

Appellants do not provide separate and distinct arguments for patentability with respect to dependent claims 2 through 5, 7 through 13, 15, 16, 19, and 20. Therefore, we select independent claims 1, 14, and 17 as representative of the cited claims. Consequently, Appellants have not shown error in the Examiner's rejection of dependent claims 2 through 5, 7 through

13, 15, 16, 19, and 20 for the reasons set forth in our discussion of independent claims 1, 14, and 17. *See* 37 C.F.R. § 41.37(c)(1)(vii).

V. CONCLUSION OF LAW

Appellants have not shown that the Examiner erred in rejecting claims 1 through 5, 7 through 17, and 19 through 22 as being unpatentable under 35 U.S.C. § 103(a).

VI. DECISION

We affirm the Examiner's decision to reject claims 1 through 5, 7 through 17, and 19 through 22 as being unpatentable under 35 U.S.C. § 103(a).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

Vsh